

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2005-_____

NPDES NO. CA0004774

WASTE DISCHARGE REQUIREMENTS
FOR
STATE OF CALIFORNIA - DEPARTMENT OF FISH AND GAME
NIMBUS SALMON AND STEELHEAD HATCHERY
AMERICAN RIVER TROUT HATCHERY
SACRAMENTO COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Regional Board) finds that:

1. The State of California, Department of Fish and Game (DFG) submitted a Report of Waste Discharge dated 17 July 2002 and applied for a renewal of its permit to discharge under the National Pollutant Discharge Elimination System (NPDES) from the Nimbus Salmon and Steelhead Hatchery (NFH) and the American River Trout Hatchery (ARTH). The Nimbus Salmon and Steelhead Hatchery and the American River Trout Hatchery are co-located and regulated under a single NPDES permit. The NFH and ARTH are hereafter jointly referred to as the Facility. The California Department of Fish and Game (DFG), which operates both hatcheries on property owned by the United States Bureau of Reclamation and DFG, is hereafter referred to as the Discharger.
2. The discharge of treated flow-through process wastewater to the American River was previously regulated by Waste Discharge Requirements (WDRs) Order No. 5-00-268 (NPDES No. CA0004774), adopted by the Regional Board on 8 December 2000.
3. The Facility is located on the south bank of the American River, downstream from Hazel Avenue and Lake Natoma in Rancho Cordova, Sacramento County (T9N, R7E, MDB&M, latitude N 38° 38' 04" and longitude W 121° 13' 40"), as shown in Attachment A, a part of this Order.
4. The United States Environmental Protection Agency (USEPA) and the Regional Board have classified this discharge as a minor discharge.
5. The NFH produces juvenile Chinook salmon and steelhead to mitigate for the loss of anadromous fisheries resources due to the operation of Folsom and Nimbus dams. The NFH traps adult fish, collects, incubates, and hatches fish eggs, and rears juvenile fish. The fish are reared for up to a year and trucked to release sites. The fish rearing occurs in concrete raceways utilizing a flow-through, single-pass water system. The NFH consists of a fish ladder for adult salmon and steelhead, four holding ponds for adult fish, a spawning deck for egg removal and fertilization, two hatchery buildings (No. 1 and 2), six 10-ft by 400-ft raceways for rearing, and ancillary operations. The NFH's current

goal for fish rearing is approximately 430,000 steelhead and 4 million salmon per year. Fish are transferred from the NFH to California water bodies for release.

The ARTH obtains fish eggs or fingerling fish from other hatcheries, or collects fish eggs at remote sites. The eggs are incubated and hatched, and fish are reared to various sizes to accommodate various management strategies. Most of the fish are reared for almost a year to reach "catchable size" (1/2 pound). The ARTH receives fertilized trout eggs for hatching and raises fish in one hatchery building, four 10-ft by 200-ft nursery ponds, and ten 10-ft by 600-ft raceways. A small number of inland salmon are also raised at the ARTH. A fish disease control laboratory is located at the ARTH. The ARTH's current goal for fish rearing is approximately one million fish per year. Fish are transferred from the ARTH to several California water bodies for release.

In its Report of Waste Discharge, the Discharger reported the following total yearly harvestable weights: 600,000 lbs of trout, 70,000 lbs of salmon, and 130,000 lbs of steelhead. The Discharger also reported that 90,000 lbs of food fed during the month of maximum feeding (May).

6. The NFH and the ARTH receive water from Lake Natoma, upstream from Nimbus Dam, via a common 60-inch line. Lake Natoma is part of the American River system which flows from the Sierra Nevada mountain range to Folsom Lake, through Lake Natoma, to the Sacramento River. Combined water intake for both hatcheries was reported by the Discharger as approximately 39 to 45 million gallons per day (mgd), and, as stated in the previous Order, can be as high as 90 mgd. Intake flow is controlled by the Discharger and is adjusted to meet operational needs (e.g., intake flow is reduced when the raceways are cleaned). The hatcheries also receive minor flow from Lake Natoma via an older 42-inch line (estimated to be less than 4.2 mgd). Flow through the 42-inch line is maintained to prevent water in the line from becoming stagnant. All water is used on a once-through basis, and is discharged to the American River through four outfalls (001, 002, 003, and 004).
7. Outfall 004 is an overflow point from two parallel settling ponds. The Facility includes two parallel settling ponds for the disposal of wastewater from raceways and rearing ponds during normal cleaning operations, and from the incubator building, the fish disease lab, and local surface drainage. The settling ponds were constructed in highly permeable gravels, which allow the entire flow to indirectly discharge to the American River through seepage. The settling ponds were also constructed with overflow points to a 12-inch pipe that discharges directly to the American River (Outfall 004). Total flow to these ponds varies from approximately 20 to 40 mgd. Because of rapid infiltration within the ponds, the Discharge reports that the ponds have not overflowed and discharged via Outfall 004 directly to the American River for at least the last six years.
8. Wastewater is discharged from the Facility at four outfalls as shown by Attachment B, a

part of this Order, and described as follows:

Outfall 001 – Overflow from the NFH holding ponds and fresh water, if needed, comprise the water discharged from the NFH fish ladder to the American River through Outfall 001. Discharge from Outfall 001 is seasonal, with flow typically from November to April when the fish ladder is open. The Discharger has estimated the flow from Outfall 001 to be 19 mgd.

Outfall 002 – Wastewaters from the NFH hatchery buildings (water used for egg incubation and hatching) and the NFH spawning deck (water used during egg removal) are discharged to the American River through Outfall 002. The Discharger has estimated Outfall 002 flow to be 3 mgd.

Outfall 003 – Outfall 003 consists solely of wastewater from the ARTH rearing ponds (raceways). Approximately 50% of the ARTH rearing ponds flow during normal operations is directly discharged to the American River through Outfall 003. All flow from the ARTH raceways is diverted to the settling ponds when the raceways are being cleaned or when treatment chemicals are added. The estimated flow from Outfall 003 is 18 mgd.

Outfall 004 – Outfall 004 discharges to the American River any overflow from the two settling ponds at the Facility. Overflow and discharge via Outfall 004 directly to the American River has not occurred for at least the last six years. The settling ponds receive wastewaters from the following sources: 50% of the flow from the ARTH rearing ponds (the other 50% of flow from the ARTH rearing ponds is discharged through Outfall 003, as described previously), all the wastewater flows from the NFH hatchery raceways, the ARTH hatchery building, the ARTH nursery ponds, and the ARTH fish disease laboratory. Because the ponds are permeable and discharge to the American River via seepage, the Discharger reports it has not discharged from Outfall 004 for at least six years.

9. Water used for cleaning lab glassware is discharged to a closed system at the Fish and Wildlife Pollution Control Laboratory, which is under separate requirements of another Waste Discharge Requirements Order. Such wastewater is disinfected and sent to a lined evaporation waste pond that has no discharge to surface or ground waters.
10. According to monthly self-monitoring and laboratory reports submitted by the Facility between March 2000 and September 2003, influent water quality had the following characteristics:

<u>Constituent</u>	<u>Units</u>	<u>Min</u>	<u>Max</u>	<u>Avg</u> *
Total Suspended Solids (TSS)	mg/L	< 1.0	6.2	1.9
Settleable Solids	ml/L	0**	0**	0**

<u>Constituent</u>	<u>Units</u>	<u>Min</u>	<u>Max</u>	<u>Avg</u> *
pH	standard units	6.6	8.0	--
Total Dissolved Solids (TDS)	mg/L	24	117	45
Turbidity	NTUs	0.51	3.5	1.2
Dissolved Oxygen	mg/L	5.3	12.2	9.3
Conductivity	µmhos/cm	39	218	62

* Average of quantifiable values only

** Settleable solids reported as "0" rather than < Reportable Level

11. Based on data from monthly self-monitoring and laboratory reports submitted by the Facility between March 2000 and September 2003, the following effluent characteristics describe the discharge from Outfall 001:

<u>Constituent</u>	<u>Units</u>	<u>Min</u>	<u>Max</u>	<u>Avg</u> *
TSS	mg/L	< 1.0	7.1	2.9
Settleable Solids	ml/L	0**	0**	0**
pH	standard units	6.9	7.9	--
TDS	mg/L	23	82	43.9
Turbidity	NTUs	0.66	5.5	2.1
Dissolved Oxygen	mg/L	7.8	11.6	10.6
Conductivity	µmhos/cm	48	88	65.0

* Average of quantifiable values only

** Settleable solids reported as "0" rather than < Reportable Level

12. Based on data from monthly self-monitoring and laboratory reports submitted by the Facility between March 2000 and September 2003, the following effluent characteristics describe the discharge from Outfall 002:

<u>Constituent</u>	<u>Units</u>	<u>Min</u>	<u>Max</u>	<u>Avg</u> *
TSS	mg/L	< 1.0	10	2.6
Settleable Solids	ml/L	0**	0**	0**
pH	standard units	6.9	8	--
TDS	mg/L	20	98	43.1
Turbidity	NTUs	0.52	4.8	1.6
Dissolved Oxygen	mg/L	7.3	12.1	9.9
Conductivity	µmhos/cm	44	88	63.3

* Average of quantifiable values only

** Settleable solids reported as "0" rather than < Reportable Level

13. Based on data from monthly self-monitoring and laboratory reports submitted by the Facility between March 2000 and September 2003, the following effluent characteristics describe the discharge from Outfall 003:

<u>Constituent</u>	<u>Units</u>	<u>Min</u>	<u>Max</u>	<u>Avg</u> *
TSS	mg/L	< 1.0	7.4	3.4
Settleable Solids	ml/L	0**	0**	0**
pH	standard units	6.6	7.8	--
TDS	mg/L	16	100	45.0
Turbidity	NTUs	0.67	7.2	1.5
Dissolved Oxygen	mg/L	5.8	9.8	7.8
Conductivity	µmhos/cm	39	90	62.0

* Average of quantifiable values only

** Settleable solids reported as "0" rather than < Reportable Level

14. Outfall 005: As described previously, the Discharger reports it has not discharged from Outfall 004 (overflow from the settling ponds) for at least six years. To ensure adequate characterization of wastewater from the Facility during drug and chemical treatment and the potential effects of percolation from the settling ponds to surface waters, this Order requires monitoring of wastewater discharged to the settling ponds (new Outfall 005) and monitoring of the American River downstream of the settling ponds, as required by the previous Order. No numeric discharge specifications are applied to Outfall 005.
15. Wastes generated at the Facility include fish fecal material, unconsumed fish food, nutrients, algae, silt, chemicals, and therapeutic agents used to treat fish and control disease.
16. Aquaculture drugs and chemicals are used at the Facility to treat fish directly for parasites, fungi, and bacteria, as well as to clean rearing raceways in order to reduce the spread of disease among the confined fish population. Since May 2000, the Discharger has reported the use of the following drugs and chemicals at the Facility: copper sulfate, formalin (as a 37% formaldehyde, methanol-free solution), sodium chloride (salt), hydrogen peroxide, potassium permanganate, oxytetracycline (Terramycin®) as a feed additive, and penicillin G.

The Discharger indicated in its Report of Waste Discharge and confirmed in a subsequent communication with the Regional Board, dated 23 April 2004, the potential use of the following additional aquaculture drugs and chemicals in the future: acetic acid, calcium chloride, P.V.P. iodine/iodophor, chloramine-T, tricaine methanesulfonate (MS-222), AQUI-S®, soluble oxytetracycline, Romet-30® (sulfadimethoxine-ormetoprim), florfenicol, carbon dioxide, sodium bicarbonate, amoxycillin, erythromycin, vibrio vaccine, and enteric redmouth bacertin.

17. All domestic wastewater is discharged to an on-site septic system, which is regulated by the County of Sacramento.

18. Three species chronic toxicity monitoring was required on a quarterly basis in the previous Order. Two sets of chronic toxicity test results were submitted by the Discharger. One set was for samples taken in January 2001 and analyzed for whole effluent toxicity using *Ceriodaphnia dubia* as the test species. The second set of data was for samples taken in March 2002 and analyzed for whole effluent toxicity using *Ceriodaphnia dubia*, *Pimephales promelas*, and *Selanastrum capricornutum*. There were no statistically significant differences in survival of *Ceriodaphnia dubia* or *Pimephales promelas* between various dilutions of effluent (up to 100% effluent) and a control sample with the exception of one dilution (a mixture of 87.5% receiving water and 12.5% effluent) for the March 2002 sample and the test species *Pimephales promelas*. Furthermore, for the same samples, only one test (again, a mixture of 87.5% receiving water, 12.5 % effluent) showed statistically significant difference in growth of *Pimephales promelas* and reproduction of *Ceriodaphnia dubia* versus the control sample. There was no statistically significant difference in growth of *Selanastrum capricornutum* for any of the dilutions tested. The Discharger has conducted and continues to conduct special toxicity studies to determine the effects of the maximum possible concentration of therapeutic drugs administered at hatcheries. Some provisions of this Order are, in part, based on the results of the completed studies. Based on the chronic toxicity tests and the completed and ongoing studies of aquaculture drugs conducted by the Discharger, the requirement for chronic toxicity monitoring is being removed in this Order. This Order addresses the narrative toxicity objective from the Basin Plan by considering aquaculture drugs and chemicals individually.

APPLICABLE LAWS, REGULATIONS, POLICIES, AND PLANS

19. A cold-water concentrated aquatic animal production (CAAP) facility is defined in Title 40 of the Code of Federal Regulations (40 CFR 122.24) as a fish hatchery, fish farm, or other facility which contains, grows, or holds cold-water fish species or other cold water aquatic animals including, but not limited to, the Salmonidae family of fish (e.g. trout and salmon) in ponds, raceways, or other similar structures. In addition, the facility must discharge at least 30 calendar days per year, produce at least 20,000 pounds harvest weight (9,090 kilograms) of aquatic animals per year, and feed at least 5,000 pounds (2,272 kilograms) of food during the calendar month of maximum feeding. A facility that does not meet the above criteria may also be designated a cold-water CAAP facility upon a determination that the facility is a significant contributor of pollution to waters of the United States [40 CFR 122.24(c)]. Cold-water, flow-through CAAP facilities are designed to allow the continuous flow of fresh water through tanks and raceways used to produce aquatic animals (typically cold-water fish species). Flows from CAAP facilities ultimately are discharged to waters of the United States and of the State. 40 CFR 122.24 specifies that CAAP facilities are point sources subject to the National Pollutant Discharge Elimination System (NPDES) program. The Discharger's facility meets the definition of a cold-water, flow-through CAAP.

20. The operation of CAAP facilities may introduce a variety of pollutants into receiving waters. USEPA identifies three classes of pollutants: (1) conventional pollutants (i.e., total suspended solids (TSS), oil and grease (O&G), biochemical oxygen demand (BOD), fecal coliforms, and pH); (2) toxic pollutants (e.g., metals such as copper, lead, nickel, and zinc and other toxic pollutants; and (3) non-conventional pollutants (e.g., ammonia-N, formalin, and phosphorus). Some of the most significant pollutants discharged from CAAP facilities are solids from uneaten feed and fish feces that settle to the bottom of the raceways. Both of these types of solids are primarily composed of organic matter including BOD, organic nitrogen, and organic phosphorus.
21. Fish raised in CAAP facilities may become vulnerable to disease and parasite infestations. Various aquaculture drugs and chemicals are used periodically at CAAP facilities to ensure the health and productivity of the confined fish population, as well as to maintain production efficiency. Aquaculture drugs and chemicals are used to clean raceways and to treat fish for parasites, fungal growths and bacterial infections. Aquaculture drugs and chemicals are sometimes used to anesthetize fish prior to spawning or “tagging” processes. As a result of these operations and practices, drugs and chemicals may be present in discharges to waters of the United States or waters of the State.
22. USEPA has promulgated Effluent Limitation Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category (hereafter “ELG”). The ELG regulation establishes national technology-based effluent discharge requirements for flow-through and recirculating systems and for net pens based on Best Practicable Control Technology Currently Available (BPT); Best Control Technology for Conventional Pollutants (BCT); Best Available Technology Economically Achievable (BAT); and New Source Performance Standards (NSPS). In its proposed rule, published on 12 September 2002, USEPA proposed to establish numeric limitations for a single constituent – total suspended solids (TSS) – while controlling the discharge of other constituents through narrative requirements. In the final rule, however, USEPA determined that, for a nationally applicable regulation, it would be more appropriate to promulgate qualitative TSS limitations in the form of solids control best management practices (BMP) requirements. Furthermore, the final ELG does not include numeric effluent limitations for non-conventional and toxic constituents, such as aquaculture drugs and chemicals, but also relies on narrative limitations to address these constituents.
23. The Regional Board adopted a *Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins* (hereafter Basin Plan). The Basin Plan designates beneficial uses, establishes water quality objectives, and describes an implementation program and policies to achieve water quality objectives for all waters of the Basin. This includes plans and policies adopted by the State Water Resources Control Board (SWRCB) and incorporated by reference, such as Resolution No. 68-16,

“Statement of Policy with Respect to Maintaining High Quality of Waters in California” (Resolution No. 68-16). These requirements implement the Basin Plan. The Basin Plan, as amended, designate beneficial uses, establish water quality objectives, and contain implementation plans and policies for waters of the Basins. Pursuant to the California Water Code §13263(a), waste discharge requirements must implement the Basin Plan.

24. USEPA adopted the *National Toxics Rule* (NTR) on 22 December 1992, which was amended on 4 May 1995 and 9 November 1999, and the *California Toxics Rule* (CTR) on 18 May 2000, which was amended on 13 February 2001. These Rules contain water quality standards applicable to this discharge. The SWRCB adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Policy or SIP) on 2 March 2000, which contains policies and procedures for implementation of the NTR and the CTR.
25. Resolution No. 68-16 requires the Regional Board, in regulating discharges of waste, to maintain high quality waters of the State until it is demonstrated that any change in water quality will be consistent with the maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Board’s policies (e.g., water quality constituents in concentrations that exceed water quality objectives). Resolution 68-16 requires that discharges be regulated to meet best practicable treatment or control in order to assure that pollution or nuisance will not occur; and the highest water quality be consistently maintained for the maximum benefit to the people of the State. The Board has considered Resolution 68-16 and Federal antidegradation regulations at 40 CFR 131.12 and compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.
26. Section 303 (d) of the CWA requires states to identify waters for which implementation of technology-based effluent limitations have not been stringent enough to attain water quality standards for those waters. On 25 July 2003 the USEPA approved the State’s updated list of 303 (d) impaired waters, which lists the Lower American River between Nimbus Dam and the Sacramento River as impaired for mercury, with the potential sources identified as abandoned mines, and unknown toxicity.

BENEFICIAL USES

27. The existing beneficial uses of the American River from Folsom Dam to the Sacramento River, as identified in Table II-1 of the Basin Plan, are municipal and domestic supply (MUN); irrigation (AGR); industrial service and power supply (IND, and POW); water contact recreation (including canoeing and rafting) (REC-1); non-contact water

recreation (REC-2); warm and cold freshwater habitat (WARM and COLD); warm and cold water fish migration habitat (MIGR); warm and cold water spawning habitat (SPWN); and wildlife habitat (WILD).

28. Beneficial uses of the underlying groundwater are municipal and domestic supply (MUN), agricultural supply irrigation (AGR), industrial service supply (IND) and industrial process supply (PRO).

REASONABLE POTENTIAL AND EFFLUENT LIMITATIONS

29. Federal regulations at 40 CFR 122.44 require NPDES permits to contain effluent limitations, including technology-based and water quality-based limitations for specific constituents and limitations based on toxicity.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

30. USEPA's final ELG for the aquaculture industry does not include numeric effluent limitations on any conventional, non-conventional, or toxic constituents. Rather, USEPA promulgated qualitative limitations in the form of BMP requirements. Technology-based requirements in this Order are based on a combination of application of the ELG for BMP requirements and case-by-case numeric limitations developed using best professional judgment (BPJ) and carried over from the previous Order. Section 402(o) of the CWA prohibits backsliding of effluent limitations that are based on BPJ to reflect a subsequently promulgated ELG that is less stringent. Order No. 5-00-268 (a revised Order) established effluent limitations for TSS of 5.0 mg/L net over levels in influent and 15 mg/L net as a monthly average and daily maximum, respectively, based on BPJ. In addition, the Order established effluent limitations for settleable solids of 0.1 ml/L net and 0.2 ml/L net as a monthly average and daily maximum, respectively, based on BPJ. Results of monitoring indicate the Discharger is capable of meeting these limitations. Removal of these numeric limitations for TSS and settleable solids would constitute backsliding under CWA Section 402(o). The Regional Board has determined that these numeric effluent limitations for TSS and settleable solids continue to be applicable to the Facility and that backsliding is not appropriate. These limitations are established as a means of controlling the discharge of solids from algae, silt, fish feces and uneaten feed. This Order does not include mass effluent limitations for TSS because there are no standards that specifically require a mass-based effluent limitation, mass of the pollutant discharged is not specifically related to a measure of operation (40 CFR 122.45(f)(iii)), and, in addition, mass-based effluent limitations for TSS are not necessary because this Order includes both concentration-based limitations and a maximum flow limitation. These changes are consistent with federal anti-backsliding provisions of 40 CFR 122.44(l)(1) and 122.62(a)(2).

WATER QUALITY-BASED EFFLUENT LIMITATIONS (WQBEL's)

31. The federal regulations at 40 CFR 122.44(d)(1) require effluent limitations for all pollutants that are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an in-stream excursion above a numeric water quality criterion (such as CTR criterion) or a narrative water quality criterion within a State water quality standard. These regulations also set forth a methodology for establishing effluent limitations based on narrative state water quality criteria [40 CFR 122.44(d)(1)(vi)(A-C)].
32. The USEPA, SWRCB, and Regional Board have adopted or published standards that are used to implement 40 CFR 122.44. The USEPA has promulgated the CTR and NTR that established water quality criteria. The SWRCB has adopted the SIP that implements the CTR and NTR. The USEPA also has published recommended ambient water quality criteria and the Basin Plan contains numeric and narrative water quality objectives. The Basin Plan contains an Implementation Policy (“Policy for Application of Water Quality Objectives”) that, in part, sets forth a process for translating narrative water quality objectives into numeric effluent limitations. The USEPA ambient water quality criteria, results of toxicity studies conducted by the California Department of Fish and Game, and the Basin Plan “Policy of Application of Water Quality Objectives” have been used to implement 40 CFR 122.44(d)(1)(v).
33. On September 2001, the Executive Officer of the Regional Board issued a letter pursuant to Section 13267 of the California Water Code (CWC) requiring all NPDES Dischargers to conduct effluent and receiving water monitoring and submit results of this monitoring in accordance with a time schedule provided in the letter. The Discharger conducted a study to determine whether levels of NTR, CTR, or other pollutants in the discharge have the reasonable potential to cause or contribute to an in-stream excursion above a numeric or narrative water quality standard, including Basin Plan numeric or narrative objectives and CTR/NTR criteria. Results of this study were submitted to the Regional Board for samples taken on 9 April 2002 and 9 September 2003. The effluent samples were proportionally composited from grab samples taken from the intake water (to represent Outfall 001), Outfall 002, Outfall 003, and the discharge to the settling ponds (to represent Outfall 004). Some constituents monitored in this study were not detected at concentrations equal to or greater than appropriate analytical technique Minimum Levels (ML’s) specified by Appendix 4 of the SIP. Where an approved laboratory analytical method and associated ML could not, at this time, determine whether an analyte is present in the discharge above the applicable criteria, a Provision of this Order requires resampling for the constituent if new ML’s are adopted by the SWRCB.
34. Section 1.3 of the SIP requires that the Regional Board impose water quality-based effluent limitations for a priority pollutant if (1) the maximum effluent concentration (MEC) is greater than the most stringent CTR criterion or applicable site-specific Basin Plan objective, or (2) the ambient background concentration is greater than the CTR

criterion or applicable site-specific Basin Plan objective, or (3) other information is available to determine that a water quality-based effluent limitation is necessary to protect beneficial uses.

35. Based on effluent and receiving water study data submitted by the Discharger, routine effluent and receiving water monitoring, information from the Discharger regarding use of aquaculture drugs and chemicals, and DFG toxicity studies for aquaculture drugs and chemicals, the discharge has the reasonable potential to cause or contribute to an in-stream excursion above narrative or numeric water quality criteria or objectives for copper, pH, and formaldehyde. As required by 40 CFR Part 122.44 (d)(1)(i)-(iii), this Order includes water quality based effluent limitations for copper, pH, and formaldehyde. In addition, this Order carries over from the previous Order effluent limitations for dissolved oxygen (DO), turbidity, and total dissolved solids (TDS) based on water quality objectives from the Basin Plan.
36. In situations where receiving water flows are substantially greater than effluent flows, dilution may be considered in establishing effluent limitations. However, when a receiving water is impaired by a particular pollutant or stressor, limited or no pollutant assimilative capacity may be available in spite of the available dilution. Additionally, water quality based effluent limitations may be established considering acute wasteload allocations and the need to prevent acutely toxic conditions at the point of discharge. In these instances, and depending upon the nature of the pollutant, effluent limitations may be set equal to or less than the applicable water quality criteria or objectives that are applied at the point of discharge such that the discharge will not cause or contribute to a receiving water excursion above water quality objectives established to protect the beneficial uses. The copper and formaldehyde effluent limitations are based upon protection of aquatic life from acute effects. Therefore, it is appropriate to calculate effluent limitations with no dilution allowance.

CTR Constituents

Copper

37. Copper, primarily in the forms of copper sulfate and chelated copper compounds, is used in fish hatcheries to control algae and other vegetation that is susceptible to the toxic effects of copper uptake, and it is used to control the growth of external parasites and bacteria on fish. Copper sulfate may be used at the Facility in the future at a rate of up to 0.5 pounds copper sulfate per 1 cfs in raceways. Lack of accurate flow measurements for the raceways precludes meaningful estimates of potential concentrations of copper in the discharge to or from the settling ponds. Copper concentration in the composited discharge from the Facility was 1.3 µg/L, but this sample represents the combined discharge from all outfalls and was not taken during copper treatments. Estimated potential discharge copper concentrations during copper treatments from other DFG

facilities (Mt. Shasta, Mokelumne, Merced) range from 58 to 200 µg/L.

38. Copper is identified as a priority pollutant in the NTR and CTR. The CTR includes Ambient Water Quality Criteria for the Protection of Aquatic Life for copper. The Criterion Maximum Concentration (CMC), a 1-hour average, and Criterion Continuous Concentration (CCC), a 4-day average, are hardness dependent. The criteria are expressed in terms of the dissolved fraction of the metal in the water column and are calculated from the total recoverable values by applying a conversion factor. The conversion factor in the CTR is 0.96 for both acute (CMC) and chronic (CCC) criteria. Water quality criteria for copper for the protection of aquatic life, as established by the CTR are 3.4 µg/L (acute) and 2.6 µg/L (chronic) criteria for dissolved copper (3.5 and 2.7 µg/L total recoverable) at 23 mg/L hardness, which is the minimum effluent and receiving water hardness reported with the Facility's CTR monitoring. The site-specific copper criterion (acute) from the Basin Plan for the Lower American River (between Folsom Dam and the Sacramento River) is 10.4 µg/L (total recoverable). Based on DFG's estimates of potential application rates, and estimated potential copper discharge concentrations from other DFG facilities, there is reasonable potential for copper to be present in the discharge at levels exceeding water quality criteria or objectives for the protection of aquatic life from the CTR and the Basin Plan. Accordingly, this Order includes WQBELs for copper.
39. Effluent limitations for copper must be expressed as a total recoverable concentration. Since a site-specific translator has not been developed for copper as described in the SIP Section 1.4.1, the USEPA conversion factor for copper of 0.960 was used for translating the dissolved copper criterion into a total recoverable effluent concentration allowance (ECA) with no dilution. Accordingly, both an Average Monthly Effluent Limitation (AMEL) and Maximum Daily Effluent Limitation (MDEL) for copper are established in this Order based on the CTR criteria and the site-specific criterion from the Basin Plan and procedures outlined in the SIP, as shown in Attachment C.
40. Although the effluent limitations for copper are new requirements in this Order, the Discharger has not reported using used copper sulfate at the facility in recent years and, therefore, should be able to manage use of copper sulfate to comply with the new effluent limitations. This Order does not establish a compliance schedule for copper limitations, but requires compliance with final effluent limitations for copper immediately.

Mercury

41. The Lower American River between Nimbus Dam and the Sacramento River is impaired by mercury. Mercury is identified as a priority pollutant in the NTR and CTR. The CTR includes the Ambient Water Quality Criterion for the Protection of Human Health (for consumption of water and organisms) of 0.050 µg/L for mercury. The Discharger collected two effluent and two receiving water samples for mercury. Mercury was

detected in the Facility's effluent at concentrations of 0.00115 µg/L and 0.0781 µg/L. Mercury concentrations in the receiving water were reported as 0.00081 and 0.00143 µg/L. The maximum effluent concentration of mercury exceeds the CTR criterion. However, there are no known processes or materials which the Discharger uses as a result of hatchery operation that contain or contribute mercury to the final effluent. For this Facility, intake water is from the same water body as the receiving water body. In accordance with Section 1.4.4 of the SIP, the Regional Board may consider priority pollutants in intake water on a pollutant-by-pollutant and discharge-by-discharge basis when establishing water quality based effluent limitations provided certain conditions are met. The current data are insufficient to determine whether effluent concentrations of mercury are a result of spatial or temporal changes in mercury concentrations of the influent supply water, or may be influenced by groundwater accretions within the settling ponds. Therefore, this Order requires the Discharge to conduct a study of influent, effluent, and receiving water mercury concentrations to determine whether mercury is discharged from the facility at levels that cause, have the reasonable potential to cause, or contribute to an excursion of applicable water quality standards. Based upon the results of this study, this Order may be reopened to include final effluent limitations for mercury based upon the CTR criterion, a load allocation from the TMDL, or, limitations which reflect intake water credits in accordance with Section 1.4.4 of the SIP if applicable.

Non-CTR Constituents

42. The Basin Plan contains water quality objectives for pH in the form of a range of acceptable pH values (measured in standard units). In the previous Order, the Regional Board established effluent limitations in the form of an acceptable range of pH between 6.5 and 8.5 standard units for discharges to the American River. This existing pH limitation is carried over to this Order with the addition, however, that an effluent pH outside of this range is acceptable only where influent pH measured at the same time also is outside the range. In such cases, effluent pH may be outside the acceptable range, but only to the same extent that influent pH is outside of this range. This limitation will control the discharge of drugs or chemicals (e.g., acetic acid) that may alter the pH of the effluent. Based on recent self-monitoring reports, the discharge has remained within the acceptable range.
43. The Basin Plan contains water quality objectives for dissolved oxygen (DO) concentrations not to be reduced below minimum levels (measured in mg/L). For waters designated COLD and SPWN, the Basin Plan specifies that the DO concentrations shall not be reduced below 7.0 mg/L at any time. In the previous Order, the Regional Board established effluent limitations requiring a minimum DO concentration of 7 mg/L for discharges to the American River. Based on self-monitoring reports, the discharge and receiving water DO concentrations have periodically fallen below 7.0 mg/L. The existing DO limitation is carried over to this Order with the addition, however, that an effluent DO below 7.0 mg/L is acceptable only where influent DO measured at the same

time also is outside the range and there is no reduction in DO from the influent to the effluent.

44. The Basin Plan contains turbidity water quality objectives for the American River from Folsom Dam to the Sacramento River. Except for periods of storm runoff, the Basin Plan specifies that the turbidity shall be less than or equal to 10 NTUs. The previous Order included an effluent limitation for turbidity of 10 NTUs as a maximum daily limitation. To ensure continued compliance with the water quality objective from the Basin Plan, this effluent limitation is retained in this Order.
45. A 37 percent formaldehyde solution (formalin) is periodically used at hatcheries as a fungicide treatment on fish eggs and fish in the raceways. Although the Discharger has not used formalin on a routine basis, it has requested the ability to use formalin in the future. Formalin (also known by the trade names Formalin-F®, Paracide-F®, PARASITE-S®) is approved through FDA's New Animal Drug Application (NADA) program for use in controlling external protozoa and monogenetic trematodes on fish, and for controlling fungi of the family *Saprolegniaceae* in food-producing aquatic species (including trout and salmon). For control of other fungi, formalin may be used under an Investigational New Animal Drug (INAD) exemption. Formalin typically is used as a "drip" treatment to control fungus on fish eggs at a concentration of 1,000 to 2,000 ppm for 15 minutes, or as a "flush" treatment in raceways of 1-8 hours in duration at a concentration of 170 to 250 ppm for 1-hour or, based on DFG use assumptions, at 25 ppm for 8-hours. Lack of accurate flow measurements for the raceways precludes meaningful estimates of formaldehyde concentrations in the discharge to the settling ponds. Monitoring reports from May 2000 through September 2003 indicate no detected concentrations of formaldehyde in the discharges from Outfall 001, Outfall 002, or Outfall 003. However, in May 2000, the Discharger sampled the settling ponds and receiving water for formaldehyde and found that the settling ponds contained formaldehyde at a concentration of 1.4 mg/L and a sample from the American River 100 feet downstream of the settling ponds contained formaldehyde at a concentration of 0.55 mg/L. The Discharger indicated that it believed the problem leading to these high levels of formaldehyde was related to malfunctioning of the pump that meters out formalin at a specific rate for treatment.

The DFG Pesticide Unit conducted biotoxicity studies to determine the aquatic toxicity of formalin using *Pimephales promelas* and *Ceriodaphnia dubia* in accordance with the analytical methods specified in EPA600/4-91-002, *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*. These "short-term chronic tests" measure effects such as reduced growth of the organism, reduced reproduction rates, or lethality. Results were reported as a No Observed Effect Concentration (NOEC) and a Lowest Observed Effect Concentration (LOEC). The DFG Pesticide Unit also conducted acute toxicity tests using *Ceriodaphnia dubia* in accordance with methods specified in EPA600/4-90/027, *Methods for Measuring the*

Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms. Acute toxicity test results typically are reported as the No Observed Adverse Effect Level (NOAEL), Lowest Observed Adverse Effect Level (LOAEL), and LC₅₀. The Regional Board considered the results of both acute and chronic aquatic life toxicity testing conducted by the DFG Pesticide Unit when determining whether water quality-based effluent limitations for formalin as formaldehyde were necessary.

Results of chronic toxicity tests indicated *Ceriodaphnia dubia* was the most sensitive species, with a 7-day NOEC value of 1.3 mg/L formaldehyde for survival and < 1.3 mg/L for reproduction (the Regional Board used an NOEC of 1.3 mg/L). Acute toxicity tests conducted using *Ceriodaphnia dubia* showed a 96-hour NOAEL of 1.3 mg/L formaldehyde. Additional acute toxicity tests were conducted using only an 8-hour exposure, resulting in a 96-hour NOAEL concentration of 6.7 mg/L formaldehyde. Based on the results of these toxicity tests, past discharges of formaldehyde from the facility, and the potential for future discharges of formaldehyde from the facility, formaldehyde may be discharged at levels that cause, have the reasonable potential to cause, or contribute to an excursion of a narrative water quality objective for toxicity from the Basin Plan. Effluent concentrations of formaldehyde may persist because of potential application procedures (e.g., successive raceway treatments, drip treatments for eggs) and due to retention of effluent in the settling basins. Accordingly, this Order includes both maximum daily and average monthly water quality-based effluent limitations for formaldehyde.

Order No. 5-00-268 included a maximum daily limitation of 0.03 mg/L for formaldehyde based on a previous California Department of Health Services (DHS) Action Level for Drinking Water. There is no USEPA or California MCL for formaldehyde. Based on the new information from DFG toxicity tests, the lack of an MCL to adequately interpret chemical objectives from the Basin Plan, and to maintain consistency with permit requirements for similar CAAP facilities in the Region, the Regional Board has determined that it is appropriate to revise the formaldehyde limitations in this Order. As shown in the Information Sheet, both an average monthly effluent limitation of 0.65 mg/L and a maximum daily effluent limitation of 1.3 mg/L were calculated based on the 96-hour NOAEL value and using the procedure in USEPA's TSD for calculating water quality-based effluent limitations. These effluent limitations are included in this Order and have been established for protection of aquatic life against toxic effects from exposure to formaldehyde in the discharge. This change in effluent limitations is consistent with the Federal anti-backsliding provisions of 40 CFR 122.44(l)(1) and 122.62(a)(2).

46. The Discharger's monthly monitoring reports indicate that sodium chloride (salt) is used on a routine basis. DFG reports that a typical application rate for salt of up to 400 lbs per 3-hour flush treatment in raceway as a fish-cleansing agent to control the spread of fish disease and to reduce stress among the confined fish population. Sodium chloride may

also used in the hatchery building tanks. In the past, the Discharger has used calcium chloride at the Facility. Calcium chloride is used to increase water calcium concentration to ensure proper egg hardening. FDA considers sodium chloride and calcium chloride as unapproved new animal drugs of low regulatory priority (LRP drug) for use in aquaculture. Consequently, FDA is unlikely to take regulatory action if an appropriate grade is used, good management practices are followed, and local environmental requirements are met. Lack of accurate flow measurements precludes meaningful estimates of sodium chloride or calcium chloride concentrations in the discharge. However, the previous Order included effluent limitations of 125 mg/L for TDS as a daily maximum, based on the site-specific salinity objective from the Basin Plan, and 100 $\mu\text{mhos/cm}$ for conductivity as a 14-day average. The Discharger has monitored effluent from Outfalls 001, 002, and 003 and the receiving water for conductivity and total dissolved solids. Conductivity levels (maximum ranging from 88-100 $\mu\text{mhos/cm}$) and concentrations of TDS (maximum ranging from 82-102 mg/L) are low in both the effluent and receiving water downstream of the settling ponds. However, because there is no indication that measurements of TDS and conductivity were taken for samples collected during treatment with sodium chloride or calcium chloride at the Facility, the effluent limitation for TDS is retained in this Order. The 14-day average limit for conductivity is removed from this Order. This conductivity limitation in the previous Order was not based on a site-specific water quality objective from the Basin Plan. An appropriate interpretation of the narrative objective for chemical constituents for conductivity is a limit of 700 $\mu\text{mhos/cm}$ to protect agricultural beneficial uses of the American River, as described in the Information Sheet. Furthermore, TDS concentration and conductivity levels are related. Controlling TDS in the discharge will control the conductivity level. Finally, this change is consistent with the Federal anti-backsliding provisions of 40 CFR 122.44(l) and 122.62(a). Effluent and receiving water monitoring of both conductivity and TDS is still required, and monthly use of sodium chloride and calcium chloride must be reported as specified in the Monitoring and Reporting Program.

47. Hydrogen peroxide (35 % H_2O_2) is used periodically at the Facility. Hydrogen peroxide may be used as a short-term immersion bath treatment in holding tanks, or as a raceway flush treatment. FDA considers hydrogen peroxide to be an LRP drug when used to control fungi on fish at all life stages, including eggs. Hydrogen peroxide may also be used under an INAD exemption to control bacterial gill disease in various fish, fungal infections, external bacterial infections, and external parasites. Hydrogen peroxide is a strong oxidizer that breaks down into water and oxygen; however, it exhibits toxicity to aquatic life during the oxidation process. Results of a single acute toxicity test conducted by DFG using *C. dubia* showed a 96-hour NOAEL of 1.3 mg/L. Since there is limited toxicity information available at this time and no information regarding actual discharge concentrations of hydrogen peroxide, this Order does not include water quality-based effluent limitations for hydrogen peroxide. However, use and monitoring of hydrogen peroxide must be reported as specified in the attached Monitoring and Reporting Program and results of additional toxicity tests must be submitted as specified in Provision No. 4.

The Regional Board will review this information, and other information as it becomes available and this Order may be reopened to establish effluent limitations for hydrogen peroxide based on additional use and toxicity information.

48. Potassium permanganate (also known by the trade name of CairoxTM) has been used periodically at the Facility to control gill disease. Potassium permanganate has a low estimated lifetime in the environment, being readily converted by oxidizable materials to insoluble manganese dioxide (MNO₂). In non-reducing and non-acidic environments, MNO₂ is insoluble and has a very low bioaccumulative potential. Potassium permanganate is not approved for use in aquaculture under FDA's NADA program and should therefore be used in accordance with an INAD exemption granted by FDA. Results of a single acute toxicity test using *C. dubia* conducted by DFG showed a 96-hour NOAEL of 0.25 mg/L for potassium permanganate. Since there is limited toxicity information available at this time and no information regarding actual discharge concentrations of potassium permanganate, this Order does not include water quality-based effluent limitations for potassium permanganate. However, use and monitoring of potassium permanganate must be reported as specified in the attached Monitoring and Reporting Program and results of additional toxicity tests must be submitted as specified in Provision No. 4. The Regional Board will review this information, and other information as it becomes available and this Order may be reopened to establish effluent limitations based on additional use and toxicity information.
49. PVP Iodine, a solution composed of 10% PVP iodine complex and 90% inert ingredients, may be used at the Facility in the future as a fish egg disinfectant (fungicide). FDA considers PVP iodine an LRP drug for use in aquaculture. Results of a single acute toxicity test with *Ceriodaphnia dubia* showed a 96-hour NOAEL of 0.86 mg/L. Since there is limited toxicity information available at this time and no information regarding actual discharge concentrations of PVP iodine, this Order does not include water quality-based effluent limitations for PVP iodine. However, use and monitoring of PVP iodine must be reported as specified in the attached Monitoring and Reporting Program and results of additional toxicity tests must be submitted as specified in Provision No. 4. The Regional Board will review this information, and other information as it becomes available and this Order may be reopened to establish effluent limitations for PVP iodine based on additional use and toxicity information.
50. Chloramine-T is not currently used but may be used by the Discharger in the future as a possible replacement for formalin. Chloramine-T is available for use in accordance with an INAD exemption by FDA. Chloramine-T breaks down into para-toluenesulfonamide (p-TSA) and, unlike other chlorine-based disinfectants, does not form harmful chlorinated compounds. The Regional Board does not have estimates of discharge concentrations of chloramine-T at this Facility. The Discharger has not conducted biotoxicity tests using chloramine-T, however results of toxicity testing from other sources show a 96-hour LC₅₀ for rainbow trout of 2.8 mg/L. The 48-hour NOEC for

Daphnia magna was reported as 1.8 mg/L. The DFG Pesticide Unit is proposing to conduct additional toxicity testing on chloramine-T to determine NOAEL concentrations. Since there is limited toxicity information available and no information regarding actual discharge concentrations of chloramine-T, this Order does not include water quality-based effluent limitations for chloramine-T. However, use and monitoring of chloramine-T must be reported as specified in the attached Monitoring and Reporting Program and results of additional toxicity tests must be submitted as specified in Provision No. 4. The Regional Board will review this information, and other information as it becomes available and this Order may be reopened to establish effluent limitations based on additional use and toxicity information.

51. In the future, the Discharger may use the anesthetics tricaine methanesulfonate, commonly known as MS-222 (with trade names of Finquel® or Tricaine-S®) and Aqui-S®. MS-222 has been approved by FDA for use as an anesthetic for Salmonidae. It is intended for the temporary immobilization of fish, amphibians and other aquatic, cold-blooded animals. It has been recognized as a valuable tool for the proper handling of these animals during manual spawning (fish stripping), weighing, measuring, marking, surgical operations, transport, photography, and research. MS-222 is a crystalline powder used as an immersion bath in an enclosed tub. Aqui-S® is a water dispersible liquid anesthetic for fin fish, crustacea and shell fish and is used in the US under an INAD exemption. The Regional Board does not have specific toxicity information for MS-222 or Aqui-S® or estimates of potential discharge concentrations of MS-222 and Aqui-S® at this Facility. Since there is limited toxicity information available at this time and no information regarding actual discharge concentrations of MS-222 or Aqui-S®, this Order does not include water quality-based effluent limitations for MS-222 or Aqui-S®. However, use and monitoring of MS-222 and Aqui-S® must be reported as specified in the attached Monitoring and Reporting Program and results of additional toxicity tests must be submitted as specified in Provision No. 4. The Regional Board will review this information, and other information as it becomes available and this Order may be reopened to establish effluent limitations based on additional use and toxicity information.
52. The hatchery may periodically use the antibiotics oxytetracycline and penicillin G as therapeutic agents in bath treatments to control fish diseases. Bath treatments are used to treat small fish in 600-gallon tanks at 100 ppm (mg/L). The Discharger has estimated the maximum concentration of penicillin G in the discharge from the NFH to be 8 mg/L and the maximum concentration from the ARTH to be significantly lower due to greater dilution. Oxytetracycline may be administered at similar concentrations (100 ppm) and, therefore, similar discharge concentrations would be expected.

Penicillin G, also known as Pen-G, is an antibiotic used in a six to eight hour immersion bath treatment to control acute disease outbreaks and has been used in the past at the Facility. Penicillin G is not approved under FDA's NADA program and its' extra-label

use in aquaculture requires a veterinarian's prescription. Due to the length of treatment time (up to eight hours), the Regional Board considered the results of acute and chronic aquatic life toxicity testing conducted by the DFG Pesticide Unit when determining whether water quality-based effluent limitations for penicillin G were necessary in this Order. Results of acute toxicity tests using *C. dubia* showed a 96-hour NOAEL of 890 mg/L. Results of 7-day chronic toxicity testing using *Pimephales promelas* showed 7-day NOEC for survival of 350 mg/L. The estimated discharge concentration of 8 mg/L of Penicillin G is well below the lowest NOEC and NOAEL. Therefore, at this time, penicillin G when used in an immersion bath treatment, is not discharged at levels that cause, have the reasonable potential to cause, or contribute to an excursion of a narrative water quality objective for toxicity from the Basin Plans. Accordingly, this Order does not include an effluent limitation for penicillin G. However, monthly use of penicillin G must be reported as specified in the attached Monitoring and Reporting Program. The Regional Board will review this information, and other information as it becomes available, and this Order may be reopened to establish effluent limitations for penicillin G based on additional use and toxicity information.

Oxytetracycline, also known by the brand name Terramycin®, is an antibiotic approved through FDA's NADA program for use in controlling ulcer disease, furunculosis, bacterial hemorrhagic septicemia, and pseudomonas disease in Salmonids. Oxytetracycline is most commonly used at CAAP facilities as a feed additive. However, oxytetracycline may also be used as an extra-label use under a veterinarian's prescription in an immersion bath of approximately six to eight hours in duration. Because Oxytetracycline may be applied in an immersion bath for up to eight hours at a time, the Regional Board considered the results of acute and chronic aquatic life toxicity testing conducted by the DFG Pesticide Unit when determining whether water quality-based effluent limitations for oxytetracycline used in an immersion bath treatment were necessary in this Order. Results of acute toxicity tests using *C. dubia* showed a 96-hour NOAEL of 40.4 mg/L. Results of chronic toxicity tests using *C. dubia* showed a 7-day NOEC for reproduction of 48 mg/L. The estimated discharge concentration of 8 mg/L of oxytetracycline is well below the lowest NOEC and NOAEL. Therefore, at this time, oxytetracycline when used in an immersion bath treatment, is not discharged at levels that cause, have the reasonable potential to cause, or contribute to an excursion of a narrative water quality objective for toxicity from the Basin Plans. Accordingly, this Order does not include an effluent limitation for oxytetracycline. However, monthly use of oxytetracycline must be reported as specified in the attached Monitoring and Reporting Program. The Regional Board will review this information, and other information as it becomes available, and this Order may be reopened to establish effluent limitations for oxytetracycline based on additional use and toxicity information.

53. Oxytetracycline, Romet-30® (sulfadimethoxine, ormetoprim), and florfenicol are antibiotics that may potentially be used by the Discharger in feed formulations to control acute disease outbreaks. Erythromycin (injected or used in feed formulations) and

amoxycillin (injected) also are antibiotics that may be used to control disease. These antibiotics must be used under conditions in the NADA approval (oxytetracycline and Romet-30®) or an INAD exemption or a veterinarian's prescription for extra-label use. Of these antibiotics, the Discharger has used only oxytetracycline in feed in the past four years. In the NPDES General Permit for Aquaculture Facilities in Idaho (Idaho General Permit), USEPA Region 10 distinguishes between antibiotics applied in feed formulations and antibiotics applied in immersion baths. The Idaho General Permit concludes that drugs or chemicals administered via feed, and ingested by fish, pose little threat to aquatic life or beneficial uses because a majority of the drug is utilized by the fish, though some literature suggests otherwise. As stated in the Idaho General Permit, "USEPA believes that disease control drugs and other chemicals provided for ingestion by fish do not pose a risk of harm or degradation to aquatic life or other beneficial uses."

Based on similar conclusions as those drawn by USEPA for the Idaho General Permit, the Regional Board has determined that oxytetracycline, Romet-30®, and florfenicol, (when used in feed formulations), erythromycin (when injected or used in feed formulations) and amoxycillin (when injected) are used in a manner that reduces the likelihood of direct discharge to waters of the United States or waters of the State, particularly when Dischargers implement BMPs, as required by this Order. Therefore, oxytetracycline, Romet-30®, and florfenicol, (when used in feed formulations), erythromycin (when injected or used in feed formulations) and amoxycillin (when injected) are not likely to be discharged from the Facility at levels that would cause, have the reasonable potential to cause, or contribute to an excursion of Basin Plan narrative water quality objectives for toxicity. Accordingly, this Order does not include water quality-based effluent limitations for these substances; however, it does require reporting use as specified in the attached Monitoring and Reporting Program. If, in the future, additional information becomes available regarding the use or toxicity of any of these substances, the Regional Board will re-evaluate whether its discharge may cause, have the reasonable potential to cause, or contribute to an excursion of Basin Plan objectives for toxicity and, if necessary, re-open this Order to include numeric effluent limits.

54. Acetic acid is used at CAAP facilities for the control of external parasites. Carbon dioxide gas is used to anesthetize fish prior to spawning. Sodium bicarbonate, or baking soda, also is used as a means of introducing carbon dioxide into the water to anesthetize fish. These substances are or may be discharged from the Facility in the future. FDA considers these substances LRP drugs for use in aquaculture. Based upon available information regarding the use of these substances at CAAP facilities in the Region, the Regional Board does not believe that acetic acid, carbon dioxide gas, or sodium bicarbonate will be discharged at levels that cause, have the reasonable potential to cause, or contribute to an excursion of Basin Plan narrative water quality objectives for toxicity. Accordingly, this Order does not include water quality-based effluent limitations for any of these substances; however, use of these substances must be reported as specified in the attached Monitoring and Reporting Program. In the future, as additional information becomes available regarding the use or toxicity of acetic acid, carbon dioxide gas, or

sodium bicarbonate, the Regional Board will re-evaluate whether the discharge of any of these substances to receiving waters may cause, have the reasonable potential to cause, or contribute to an excursion of the Basin Plan objectives for toxicity and, if necessary, re-open this Order to include numeric effluent limits.

55. The Discharger has indicated that it may use a vibrio vaccine and an enteric redmouth bacertin in the future. Vibrio vaccine may be used as an immersion or an injectable vaccine and helps protect salmonid species from vibriosis disease caused by *Vibrio anguillarum* serotype I and *Vibrio ordalii*. Vibrio vaccine stimulates the fish's immune system to produce protective antibodies, helping the animal defend itself against vibriosis. Enteric redmouth (or yersiniosis) bacertins are formulated from inactivated *Yersinia ruckeri* bacteria and may also be used as an immersion or vaccine to help protect salmonid species from enteric redmouth disease caused by *Yersinia ruckeri*. These bacertins stimulate the fish's immune system to produce protective antibodies. These veterinary biologics are licensed for use by the US Department of Agriculture's (USDA's) Center for Veterinary Biologics. Veterinarians should be consulted before beginning an immunization program. According to USDA, most biologics leave no chemical residues in animals and most disease organisms do not develop resistance to the immune response by a veterinary biologic. Based upon available information regarding the use of these substances at CAAP facilities, the Regional Board does not believe that vibrio vaccine or enteric redmouth bacertins, when used according to label and veterinarian instructions, are discharged at levels that cause, have the reasonable potential to cause, or contribute to an excursion of Basin Plan narrative water quality objectives for toxicity. Accordingly, this General Order does not include water quality-based effluent limitations for these substances; however, use of these substances must be reported as specified in the attached Monitoring and Reporting Program. In the future, as additional information becomes available regarding the use or toxicity of these biologics, the Regional Board will re-evaluate whether the discharge of any of these substances to receiving waters may cause, have the reasonable potential to cause, or contribute to an excursion of the Basin Plan objectives for toxicity and, if necessary, re-open this Order to include numeric effluent limitations.

OTHER CONSIDERATIONS

56. CWC Section 13267 states, in part, “(a) A Regional Board, in establishing...waste discharge requirements... may investigate the quality of any waters of the state within its region” and “(b) (1) In conducting an investigation... the Regional Board may require that any person who... discharges... waste...that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the Regional Board requires.” CWC Section 13383 states in part, “a regional board may establish monitoring, inspection, entry, reporting, and record keeping requirements . . . for any person who discharges pollutants . . . to navigable waters.” The attached

Monitoring and Reporting Program No. R5-2005-_____ is necessary to assure compliance with waste discharge requirements and is incorporated by reference herein. The attached Monitoring and Reporting Program is established pursuant to CWC Sections 13267 and 13383.

57. Effluent limitations, and toxic and pretreatment effluent standards established pursuant to Sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act (CWA) and amendments thereto are applicable to the discharge.
58. Best Management Practices plan requirements are established based on requirements in Effluent Limitations Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category at 40 CFR Part 451.
59. The Regional Board has considered the information in the attached Information Sheet in developing the findings in this Order. The attached Information Sheet and Attachments A, B and C are a part of this Order.
60. The action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (CEQA), Public Resources Code Section 21000, et seq., in accordance with Section 13389 of the CWC.
61. The Regional Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
62. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.
63. This Order shall serve as an NPDES permit pursuant to Section 402 of the CWA, and amendments thereto, and shall take effect upon the date of hearing, provided USEPA has no objections.

IT IS HEREBY ORDERED that Order No. 5-00-268 is rescinded and that the California Department of Fish and Game, their agents, successors and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following requirements, when discharging from the Nimbus Salmon and Steelhead Hatchery and the American River Trout Hatchery:

A. Discharge Prohibitions

1. Discharge of wastewater at a location or in a manner different from that described in the Findings is prohibited.
2. The by-pass or overflow of untreated wastewater or wastes into any surface water or surface water drainage course is prohibited, except as allowed by Standard Provision A.13.
3. Discharges from Outfall 002 directly to the American River in accordance with the terms of this Order are not considered a by-pass or overflow of untreated wastewater.
4. Discharge of waste classified as “hazardous” as defined in §2521(a) of Title 23, California Code of Regulations (CCR), §2510, et seq., (hereafter Chapter 15), or “designated”, as defined in §13173 of the CWC, is prohibited.
5. Practices that allow accumulated sludge, grit, and solid residues to be discharged to surface waters or surface water drainage courses are prohibited.

B. Effluent Limitations – Outfall 001, Outfall 002, Outfall 003, and Outfall 004

1. The combined maximum daily dry weather discharge of flow-through wastewater from Outfalls 001, 002, 003, and 004 shall not exceed 90 million gallons per day (mgd).
2. Effluent discharged from Outfall 001, Outfall 002, Outfall 003, or Outfall 004 shall not have a pH less than 6.5 nor greater than 8.5 standard units unless influent pH, measured at the same time as effluent pH, is outside the range of 6.5 to 8.5 standard units. If influent pH is less than 6.5 standard units, effluent pH shall be a value between the measured influent pH and 8.5 standard units. If influent pH is greater than 8.5 standard units, then effluent pH shall be a value between 6.5 standard units and the influent pH.
3. Effluent discharged from Outfall 001, Outfall 002, Outfall 003, and Outfall 004 shall have a minimum daily dissolved oxygen concentration of 7.0 mg/L unless the influent dissolved oxygen concentration, measured at the same time, is less than 7.0 mg/L. If the influent dissolved oxygen concentration is less than 7.0 mg/L, then the effluent dissolved oxygen concentration shall be the same as or greater than the influent dissolved oxygen concentration.
4. Effluent discharges shall not exceed the following limitations at Outfall 001, Outfall 002, Outfall 003, or Outfall 004:

<u>Constituent</u>	<u>Units</u>	<u>Average Monthly</u>	<u>Maximum Daily</u>
Total Suspended Solids (TSS) (net) ¹	mg/L	5.0	15
Settleable Solids (net) ¹	mg/L	0.1	0.2
Turbidity	NTU		10
Total Dissolved Solids (TDS)	mg/L		125
Formaldehyde	mg/L	0.65	1.3
Copper (Total Recoverable) ²	µg/L	Calculate Limitation Based on Attachment C	

¹ Effluent limitations for total suspended solids and settleable solids are net values
(Net concentration = Effluent concentration – Influent concentration)

² A daily maximum or monthly average total recoverable copper concentration shall be
considered non-compliant with the applicable effluent limitation only if it exceeds the
appropriate effluent limitation and the reported minimum level (ML). The highest acceptable
ML for calibration purposes is 0.5 µg/l. Effluent and receiving water hardness must be
measured concurrently with effluent copper concentration.

C. Discharge Specifications

1. The discharge shall not cause the degradation of any water supply or ground water.
2. Neither the treatment nor the discharge shall cause a nuisance or conditions of pollution as defined by California Water Code §13050.
3. Domestic sewage shall be maintained within the designated disposal area at all times, and there shall be no direct discharge to surface waters or surface water drainage courses.

D. Best Management Practices (BMP) Plan

The Discharger shall develop and implement a Best Management Practices Plan to prevent or minimize the generation and discharge of wastes and pollutants to the waters of the United States and waters of the State. The Discharger shall develop and implement a BMP plan consistent with the following objectives:

1. Solids Management
 - a. Conduct fish feeding in raceways in a manner that minimizes the discharge of unconsumed food to surface waters.

- b. Clean raceways at frequencies that minimize the disturbance and subsequent discharge of accumulated solids during routine activities.
- c. Report the final disposition of all other solids and liquids, including aquaculture drugs and chemicals, not discharged to surface waters in the effluent.

2. Operations and Maintenance

- a. Maintain in-system technologies to prevent the overflow of any floating matter or bypassing treatment technologies.
- b. Ensure storage and containment of drugs, chemicals, fuel, waste oil, or other materials to prevent spillage or release into the aquatic animal production Facility, waters of the United States, or waters of the State.
- c. Collect, store, and dispose of fish mortalities and other solids in an environmentally safe manner and in manner so as to minimize discharge to waters of the United States or waters of the State.
- d. Prevent fish from being released within the FDA-required withdrawal time of any drug or chemical with which they have been treated.

The Discharger shall ensure that its operations staff are familiar with the BMP Plan and have been adequately trained in the specific procedures it requires.

E. Waste Disposal

- 1. Collected screenings, sludges, and other solids, including fish carcasses, shall be disposed of in a manner approved by the Executive Officer and consistent with *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq.
- 2. All aquaculture drugs and chemicals not discharged to receiving waters in accordance with the provisions of this Order shall be disposed of in an environmentally safe manner, according to label guidelines, Material Safety Data Sheet guidelines and BMPs. Any other form of disposal requires approval from the Executive Officer.
- 3. Any proposed change in disposal practices, shall be reported to the Executive Officer at least **90 days** in advance of the change.

F. Receiving Water Limitations for the American River

Receiving water limitations are site-specific interpretations of water quality objectives contained in the Basin Plan. As such, they are a required part of this Order. However, a receiving water condition not in conformance with the limitation is not necessarily a violation of this Order. The Regional Board may require an investigation to determine cause and culpability prior to asserting a violation has occurred. The discharge shall not cause the following in the American River:

1. Fecal coliform concentrations, based on a minimum of not less than five samples for any 30-day period, to exceed a geometric mean of 200/100 ml or more than ten percent of the total number of samples taken during any 30-day period to exceed 400/100 ml.
2. Biostimulatory substances to be present which promote aquatic growths that cause nuisance or adversely affect beneficial uses.
3. Discoloration that causes nuisance or adversely affects beneficial uses.
4. Dissolved oxygen concentrations to fall below 7.0 mg/L. In the event the receiving waters are determined to have a dissolved oxygen concentration of less than 7.0 mg/l because of natural conditions, the discharge shall not depress the dissolved oxygen concentration below 95 percent of saturation.
5. Floating material in amounts that cause nuisance or adversely affect beneficial uses.
6. Oils, greases, waxes, or other materials that result in a visible film or coating on the water surface or on objects in the water.
7. The normal ambient pH to fall below 6.5, exceed 8.5, or change by more than 0.5 units.
8. Pesticides to be present in concentrations in the receiving water, bottom sediments, or aquatic life in concentrations that adversely affect beneficial uses or in concentrations that exceed the lowest levels technically and economically achievable.
9. Radionuclides to be present in concentrations that exceed maximum contaminant levels specified in the California Code of Regulations, Title 22; that harm human, plant, animal or aquatic life; or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.

10. Suspended sediment load and suspended sediment discharge rates to be altered in such a manner as to cause nuisance or adversely affect beneficial uses.
11. Deposition of material that causes nuisance or adversely affects beneficial uses.
12. Suspended material in concentrations that adversely affect beneficial uses.
13. Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or to cause nuisance or adversely affect beneficial uses.
14. An increase in the normal ambient temperature of waters by more than 5°F (3°C).
15. Toxic pollutants to be present in concentrations that adversely affect beneficial uses or that produce detrimental physiological responses in human, plant, animal, or aquatic life.
16. Except for periods of storm runoff, turbidity exceeding 10 NTUs or the turbidity of receiving waters to increase over background levels by more than:
 - a. 1 NTU when background turbidity is between 0 and 5 NTUs;
 - b. 20 percent when background turbidity is between 5 and 50 NTUs;
 - c. 10 NTUs when background turbidity is between 50 and 100 NTUs; and
 - d. 10 percent when background turbidity is greater than 100 NTUs.

In determining compliance with the above limitations, appropriate averaging periods may be applied upon approval by the Executive Officer.

17. Aquatic communities and populations, including vertebrate, invertebrate, and plant species, to be degraded.
18. Violation of any applicable water quality standard for receiving waters adopted by the Regional Board or the SWRCB pursuant to the CWA and regulations adopted thereunder.

G. Provisions

1. The Discharger shall comply with the attached Monitoring and Reporting Program No. R5-2005-_____, which is part of this Order, and any revisions thereto, as

ordered by the Executive Officer. If sufficient information is collected and indicates that the discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative or numerical water quality standard, then this Order may be reopened to include effluent limitation(s) to achieve water quality standards. Additionally, if pollutants are detected in discharges from the Discharger's Facility, but insufficient information exists to establish an effluent limitation or determine if an effluent limitation is necessary, then the Discharger may be required to conduct additional monitoring to provide sufficient information.

When requested by USEPA, the Discharger shall complete and submit additional Discharge Monitoring Reports. The submittal date shall be no later than the submittal date specified in the Monitoring and Reporting Program for Discharge Self-Monitoring Reports.

2. The Discharger shall comply with all the items of the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)", dated February 2004, which are part of this Order. This attachment and its individual paragraphs are referred to as "Standard Provisions."
3. This Order authorizes the discharge of copper sulfate (copper), formalin (formaldehyde), sodium chloride, calcium chloride, hydrogen peroxide, potassium permanganate, PVP iodine, chloramine-T, MS-222, Aqui-S®, oxytetracycline, penicillin G, Romet-30®, florfenicol, erythromycin, amoxycillin, acetic acid, carbon dioxide, sodium bicarbonate, vibrio vaccine, and enteric redmouth bacartin to the American River in accordance with the effluent limitations and other conditions herein. The Discharger shall submit the following prior to the use of any other chemical or aquaculture drug that may enter the wastewater discharge:
 - a. The common name(s) and active ingredient(s) of the drug or chemical proposed for use and discharge.
 - b. The purpose for the proposed use of the drug or chemical (i.e. list the specific disease for treatment and specific species for treatment).
 - c. The amount proposed for use and the resulting calculated estimate of concentration in the discharge.
 - d. The duration and frequency of the proposed use.
 - e. Material Safety Data Sheets and available toxicity information.
 - f. Any related Investigational New Animal Drug (INAD), New Animal Drug Application (NADA) information, extra-label use requirements and/or veterinarian prescriptions.

The Discharger also shall conduct, or submit the results of, acute toxicity tests in accordance with methods specified in *EPA-821-R-02-012*, Methods for Measuring

the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, *Fifth Edition, October 2002*, using *Ceriodaphnia dubia*, to determine the NOAEL, and LOAEL.

If the toxicity testing, or above listed information submitted to the Regional Board indicates that the drug or chemical may potentially be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an in-stream excursion above any chemical-specific water quality criteria, chemical water quality objective from the Basin Plans, or narrative water quality objective for toxicity from the Basin Plans, this Order may be reopened to established effluent limitations.

4. The Discharger shall conduct short term toxicity studies in accordance with methods specified in *EPA-821-R-02-012*, to determine the NOAEL, and LOAEL for hydrogen peroxide, potassium permanganate, PVP iodine, chloramine-T, MS-222, and Aqual-S® to reflect concentrations and exposure times that are applicable to this facility. The results shall be submitted to the Regional Board **within 12 months of adoption of this Order**. The Regional Board will review this information and this permit may be reopened to establish effluent limits based on additional use and toxicity information.
5. **Within 12 months of adoption of this Order**, the Discharger shall develop and implement a Best Management Practices (BMP) Plan that achieves the objectives and the specific requirements outlined in D. Best Management Practices Plan above. Through implementation of a BMP Plan, the Discharger shall prevent or minimize the generation and discharge of wastes and pollutants from the Facility to the waters of the United States. In the BMP Plan, each component of the Facility shall be evaluated by the Discharger for its waste minimization opportunities and its potential for causing a release of significant amounts of pollutants to receiving waters due to the failure or improper operation of equipment. The examination shall include all normal operations, including raw material and product storage areas, feeding of fish, internal movement of fish, cleaning of rearing/holding units and settling systems, processing and product handling areas, loading or unloading operations, spillage or leaks from the processing floor and dock, and sludge and waste disposal. The BMP Plan shall contain an explicit quantification of the inputs and outputs of the Facility, including fish, feed, feed components, mortalities due to predation and disease, dissolved and solid pollutants, and water. The BMP Plan shall contain a description of specific management practices and standard operating procedures used to achieve the above objectives, including, for example, schedules for solids removal from each waste collection component including what procedures will be used to determine when cleaning is necessary to prevent accumulated solids from being discharged. The BMP Plan shall contain a statement that the BMP Plan has

been reviewed and endorsed by the Facility Manager and the individuals responsible for implementation of the BMP operating plan. The Discharger shall ensure that its operations staff is familiar with the BMP Plan and have been adequately trained in the specific procedures that it requires. The Discharger shall maintain a copy of the BMP Plan at the Facility and shall make the plan available upon request to representatives of the Regional Board.

6. **Mercury Study: Within 36 months of adoption of this Order**, the Discharger shall submit to the Regional Board the results of an intake water study. The study shall include intake, effluent, and receiving water monitoring for mercury and be designed in accordance with Section 1.4.4 of the SIP to determine whether:
- a. The observed maximum ambient background concentrations of mercury and the intake water concentrations of mercury exceed the most stringent applicable criterion.
 - b. Any potential intake credits are consistent with any TMDL applicable to the Discharger.
 - c. The intake water is from the same body of water as the receiving water body.
 - d. The facility does or does not contribute to or alter the intake water mercury in a manner that adversely affects water quality and beneficial uses
 - e. The timing and location of the discharge does or does not cause adverse effects on water quality and beneficial uses that would not occur if the intake water pollutant had been left in the receiving water body.

The Discharger shall comply with the following time schedule in conducting this mercury study:

<u>Task</u>	<u>Compliance Date</u>
Submit Workplan and Time Schedule	6 Months after Adoption
Begin Study	9 Months after Adoption
Complete Study	33 months after Adoption
Submit Final Study Report	36 months after Adoption

The Discharger shall submit to the Regional Board on or before each compliance due date, the specified document or a written report detailing compliance or noncompliance with the specific date and task. If noncompliance is reported, the Discharger shall state the reasons for noncompliance and include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Board by letter when it returns to compliance with the time schedule.

If after review of the study results, this Order may be reopened to include final effluent limitations for mercury.

7. The Discharger may conduct additional studies pertaining to Facility operations, the effluent discharge, and the receiving water. For example, such studies may include a mixing zone and dilution study. The Regional Board will review such studies and, if warranted, will reopen this Order to make appropriate changes.
8. **Settling Ponds:** As noted in Finding 14, this Order requires monitoring of wastewater discharged to the settling ponds (new Outfall 005) and monitoring of the American River downstream of the settling ponds. Based upon results of this monitoring, this Order may be reopened to consider whether specific pollutant limitations for discharge to the settling ponds may be necessary.
9. **Adoption of new Minimum Level's (ML's):** Where an approved laboratory analytical method and associated ML cannot, at this time, determine whether a CTR or NTR constituent is present in the discharge above the applicable criteria, the Discharger shall resample for these constituents if new ML's are adopted by the SWRCB.
10. The Discharger shall report promptly to the Regional Board any material change or proposed change in the character, location, or volume of the discharge.
11. A copy of this Order shall be kept at the discharge Facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.
12. This Order expires on **1 April 2010** and the Discharger must file a Report of Waste Discharge in accordance with Title 23, CCR, not later than **180 days** in advance of such date an application for renewal of waste discharge requirements if it wishes to continue the discharge.
13. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office.

To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the State of Incorporation if a corporation, the name, address, and the telephone number of the persons responsible for contact with the Regional Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision D.6 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge

ORDER NO. R5-2005-_____

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STATE OF CALIFORNIA DEPARTMENT OF FISH AND GAME
NIMBUS SALMON AND STEELHEAD HATCHERY
AMERICAN RIVER TROUT HATCHERY
SACRAMENTO COUNTY

without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

I, THOMAS R. PINKOS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Regional Board, Central Valley Region, on _____.

THOMAS R. PINKOS, Executive Officer

(Date)

Tt/JME